AMENDMENTS TO THE CLAIMS

The claims are as follows:

1. (Currently amended):   A method of interconnecting a network infrastructure via a plurality of communication links comprising:

   defining a link affinity grouping based on a plurality of criteria including throughput for round-robin scheduling and throughput for a next available link scheduling;

   classifying the plurality of communication links according to a link affinity grouping;

   enabling and disabling selective ones of the plurality of communication links according to the link affinity grouping; and

   activating a particular link selected from among the enabled communication links using a selection process adapted to characteristics of the link affinity grouping.

2. (Original):   The method according to Claim 1 further comprising: analyzing performance of the enabled communication links individually and in aggregate.

3. (Original):   The method according to Claim 2 further comprising: determining whether the aggregate performance has declined to below a predetermined limit.

4. (Original):   The method according to Claim 3 further comprising: generating an alert signal when the aggregate performance declines to below the predetermined limit.

5. (Original):   The method according to Claim 2 further comprising: identifying an individual link wherein, based on the analysis, disabling of the identified link from the aggregate in the link affinity grouping will improve aggregate throughput.

KOESTNER BERTANI LLP

2192 MARTIN ST.
SUITE 150
IRVINE, CA 92612
TEL (949) 251-0250
FAX (949) 251-0260

1015.P056 US   Serial No. **10/608,585**

6. (Original): The method according to Claim 5 further comprising: automatically disabling the identified link.

7. (Original): The method according to Claim 5 further comprising: recommending disabling of the identified link.

8. (Original): The method according to Claim 2 further comprising: recommending, based on the analysis, appropriate individual links for
      inclusion into a link affinity grouping based on criteria selected from
      among a group consisting of:
      potential throughput, link path security ratings, logical unit (LUN)
            group criticality ratings, potential throughput according to the
            link selection process, link cost, link availability, primary and
            secondary replication classification, inclusion or exclusion of
            multiple link affinity groups, inclusion of partial or full link
            affinity groups, and link direction.

9. (Original): The method according to Claim 2 further comprising: determining, based on the analysis, whether altering assignment of links of
      two link affinity groups will improve throughput of both groups.

10. (Original): The method according to Claim 2 further comprising: selecting a link for activation in a data replication operation comprising:
      maintaining a list of available links;
      including a link on the list when the link becomes available;
      activating the next available link on the list;
      sending information over the activated next available link;
      receiving the sent information at a remote site; and
      reordering the received information into a proper order at the remote
            site.

Serial No. **10/608,585**

11. (Currently amended): A method of communicating data in a network infrastructure via a plurality of communication links comprising:

interconnecting a plurality of communication links between a local array and a remote array;

determining which of the plurality of communication links is currently available for usage;

maintaining a list of links available to carry the data;

including a link on the list when the link becomes available;

activating the next available link on the list; and

sending data over the activated next available link.

12. (Original): The method according to Claim 11 further comprising:

receiving the sent data at the remote array; and

reordering the received data into a proper order at the remote array.

13. (Original): The method according to Claim 12 further comprising:

destaging the reordered data to disk in a data replication application.

14. (Currently amended): A storage system comprising:

an interface capable of interconnecting a network infrastructure via a plurality of communication links, the plurality of communication links having a diversity of data-carrying capacity and performance; and

a controller coupled to the interface that assigns the plurality of communication links into at least one link affinity group based on performance criteria including throughput for round-robin scheduling and throughput for a next available link scheduling, and that controls link selection based on link affinity group assignment.

15. (Original): The storage system according to Claim 14 wherein:

the controller analyzes performance of the enabled communication links individually and in aggregate.

KOESTNER BERTANI LLP

2192 MARTIN ST.
SUITE 150
IRVINE, CA 92612
TEL (949) 251-0250
FAX (949) 251-0260

1015.P056 US   Serial No. 10/608,585

16. (Original):   The storage system according to Claim 15 wherein:
the controller manages synchronous and unordered asynchronous disk
        array replication by communicating data over all available links in a
        round-robin order, determines whether the aggregate performance
        has declined to below a predetermined limit, and generates an alert
        message for performance declines below the limit.

17. (Original):   The storage system according to Claim 16 wherein:
the controller identifies individual links wherein, based on the analysis,
        disabling of the identified link from the aggregate in the link affinity
        grouping will improve aggregate throughput.

18. (Original):   The storage system according to Claim 15 wherein:
the controller manages ordered asynchronous disk array replication by
        enabling and disabling selective ones of the plurality of
        communication links according to the link affinity grouping, and
        activating a particular link selected from among the enabled
        communication links using a selection process adapted to
        characteristics of the link affinity grouping.

19. (Original):   The storage system according to Claim 18 wherein:
the controller selects a link for activation in a data replication operation by:
        maintaining a list of available links;
        including a link on the list when the link becomes available;
        activating the next available link on the list;
        sending information over the activated next available link;
        receiving the sent information at a remote site; and
        reordering the received information into a proper order at the remote
        site.

20. (Original):   The storage system according to Claim 18 wherein:
the controller determines whether the aggregate performance has declined
        to below a predetermined limit, and generates an alert message for
        performance declines below the limit.

1015.P056 US   Serial No. 10/608,585

21. (Original): The storage system according to Claim 18 wherein:
the controller determines appropriate individual links for inclusion into a link
affinity grouping based on criteria selected from among a group
consisting of: potential throughput, link path security ratings, logical
unit (LUN) group criticality ratings, potential throughput according to
the link selection process, link cost, link availability, primary and
secondary replication classification, inclusion or exclusion of multiple
link affinity groups, inclusion of partial or full link affinity groups, and
link direction.

22. (Original): The storage system according to Claim 18 wherein:
the controller identifies individual links wherein, based on the analysis,
disabling of the identified link from the aggregate in the link affinity
grouping will improve aggregate throughput.

23. (Original): The storage system according to Claim 18 wherein:
the controller determines, based on the analysis, whether altering
assignment of links of two link affinity groups will improve throughput
of both groups.

24. (Original): The storage system according to Claim 15 wherein:
the controller manages disk array replication using a protocol converter by
communicating data over all available links in a round-robin order
over identical throughput links.

25. (Currently amended): An article of manufacture comprising:
a tangible controller usable medium having a ~~computable~~ computer
readable program code embodied therein for interconnecting a
network infrastructure via a plurality of communication links, the
~~computable~~ computer readable program code further comprising:
a code causing the controller to define a link affinity grouping based
on a plurality of criteria including throughput for round-robin
scheduling and throughput for a next available link
scheduling;

a code ~~capable of~~ causing the controller to classify the plurality of
communication links according to a link affinity grouping;

a code ~~capable of~~ causing the controller to enable and disable
selective ones of the plurality of communication links
according to the link affinity grouping;

a code ~~capable of~~ causing the controller to activate a particular link
selected from among the enabled communication links using
a selection process adapted to characteristics of the link
affinity grouping; and

a code ~~capable of~~ causing the controller to analyze performance of
the enabled communication links individually and in
aggregate.

26. (Currently amended): The article of manufacture according to Claim
25 further comprising:

a code ~~capable of~~ causing the controller to determine, based on the
analysis, appropriate individual links for inclusion into a link affinity
grouping based on criteria selected from among a group consisting
of: potential throughput, link path security ratings, logical unit (LUN)
group criticality ratings, potential throughput according to the link
selection process, link cost, link availability, primary and secondary
replication classification, inclusion or exclusion of multiple link affinity
groups, inclusion of partial or full link affinity groups, and link
direction.

27. (Currently amended): The article of manufacture according to Claim
25 further comprising:

a code ~~capable of~~ causing the controller to maintain a list of available links;

a code ~~capable of~~ causing the controller to include a link on the list when
the link becomes available;

a code ~~capable of~~ causing the controller to activate the next available link
on the list;

a code ~~capable of~~ causing the controller to send information over the
activated next available link;

KOESTNER BERTANI LLP

2192 MARTIN ST.
SUITE 150
IRVINE, CA 92612
TEL (949) 251-0250
FAX (949) 251-0260

1015.P056 US

a code ~~capable of~~ causing the controller to receive the sent information at a remote site; and

a code ~~capable of~~ causing the controller to reorder the received information into a proper order at the remote site.

28. (Currently amended): An article of manufacture comprising:

a <u>tangible</u> controller usable medium having a ~~computable~~ <u>computer</u> readable program code embodied therein for communicating data among a network infrastructure via a plurality of communication links, the ~~computable~~ <u>computer</u> readable program code further comprising:

a code ~~capable of~~ causing the controller to interconnect a plurality of communication links between a local array and a remote array;

<u>a code causing the controller to determine which of the plurality of communication links is currently available for usage;</u>

a code ~~capable of~~ causing the controller to maintain a list of links available to carry the data;

a code ~~capable of~~ causing the controller to include a link on the list when the link becomes available;

a code ~~capable of~~ causing the controller to activate the next available link on the list; and

a code ~~capable of~~ causing the controller to send data over the activated next available link.

29. (Currently amended): The article of manufacture according to Claim 28 further comprising:

a code ~~capable of~~ causing the controller to receive the sent data at the remote array;

a code ~~capable of~~ causing the controller to reorder the received data into a proper order at the remote array; and

a code ~~capable of~~ causing the controller to destage the reordered data to disk in a data replication application.

KOESTNER BERTANI LLP

2192 MARTIN ST.
SUITE 150
IRVINE, CA 92612
TEL (949) 251-0250
FAX (949) 251-0260

1015.P056 US   Serial No. **10/608,585**

30. (Currently amended): A storage system comprising:

means for interconnecting a network infrastructure via a plurality of communication links;

means for determining which of the plurality of communication links is currently available for usage;

means for classifying the plurality of communication links according to a link affinity grouping;

means for enabling and disabling selective ones of the plurality of communication links according to the link affinity grouping;

means for activating a particular link selected from among the enabled communication links using a selection process adapted to characteristics of the link affinity grouping;

means for analyzing performance of the enabled communication links individually and in aggregate; and

means for determining whether the aggregate performance has declined to below a predetermined limit.

31. (New): The method according to Claim 1 further comprising:

defining the link affinity grouping based on a plurality of criteria further including characteristics of link path security, link cost, and conditions of link availability.

32. (New): The method according to Claim 31 further comprising:

defining the link affinity grouping (LAG) based on a plurality of criteria further including classification as primary and secondary link groups for replication of a logical unit (LUN) group, classification into intra-LAG groups, classification into inter-LAG partial inclusion groups, classification into inter-LAG full inclusion groups, classification as outbound (failover) links, and classification as inbound (failback) links.

33. (New): The storage system according to Claim 14 further comprising:

the controller that assigns the communication link plurality into at least one link affinity group based on performance criteria further including

1015.P056 US   Serial No. **10/608,585**

characteristics of link path security, link cost, and conditions of link availability.

34. (New):   The storage system according to Claim 14 further comprising: the controller that assigns the communication link plurality into at least one link affinity group based on performance criteria further including classification as primary and secondary link groups for replication of a logical unit (LUN) group, classification into intra-LAG groups, classification into inter-LAG partial inclusion groups, classification into inter-LAG full inclusion groups, classification as outbound (failover) links, and classification as inbound (failback) links.

1015.P056 US   Serial No. **10/608,585**